



ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDENTS

**THE EFFECT OF TEN PROJECT MANAGEMENT
KNOWLEDGE AREAS ON THE DELAY OF EXAPNSION
PROJECTS: THE CASE OF HABESHA BREWERIES**

by

Tamerat Tamene

ID: SGS/0636/2014A

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By

Tamerat Tamene

Advisor: Misraku Molla (PhD)

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SCHOOL OF POST GRADUATE STUDIES

By
Tamerat Tamene

Advisor: Dr. Misraku Molla (PhD)

APPROVED BY:

_____ Chairperson, Department of Graduate Committee	_____ Signature	_____ Date
<u>Dr. Misraku Molla (PhD)</u> Advisor	 Signature	<u>7/19/2023</u> Date
<u>Muluadam Alemu (PhD)</u> Examiner, Internal	 Signature	<u>7/19/2023</u> Date
<u>Dr. Desta Mulugeta (PhD)</u> Examiner, External	 Signature	<u>7/19/2023</u> Date

DECLARATION

I, Tamerat Tamene, the undersigned person declare that the thesis entitled “The effect of ten project management knowledge area in the delay of expansion projects in the case of Habesha breweries” is my original and submitted for the award of Master of Art Degree in Project Management from St. Mary University at Addis Ababa and it hasn’t been presented for the award of any other degree. Under this study, fellowship of other similar titles of any other university or institution of all sources of material used for the study has been appropriately acknowledged and notice.

Tamerat Tamene

Candidate

Signature

Date

CERTIFICATION

This is to certify that Mr. Tamerat Tamene has properly completed his research work entitled “The effect of ten project management knowledge areas in the delay of expansion projects in the case of Habesha breweries” with our guidance through the time. In my recommendation, his task is appropriate to be submitted as a partial fulfillment requirement for the Master of art Degree in Project Management.

Research Advisor

Misraku Molla (PhD)

A handwritten signature in blue ink, appearing to read 'Misraku Molla', is written over a horizontal line.

Signature

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ACRONYM

PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
SPSS	Statistical Package for Social Sciences
HBSC	Habesha breweries share company.

ABSTRACT

The expansion program in a brewery requires the coordination of various knowledge areas such as project stakeholder, scope, time, cost, quality, resource, communication, risk, procurement, and integration management to ensure timely completion of the program. Any delay in the expansion program not only results in increased project costs but also impacts the bottom-line of the organization. This research aims to investigate the effect of 10 project knowledge area on the delay of the expansion program in the case of HBSC. To achieve the research objectives, this study applied explanatory research design and quantitative research methods. An online survey questionnaire has been used to collect the data. A total of 203 respondents were selected using a stratified and random sampling technique from the case brewery. The data analysis was done using descriptive statistics such as standard deviation, mean and frequency analysis. Furthermore, inferential statistics such as correlation analysis and regression analysis were conducted to determine the relationship between the independent variables which are the 10-project knowledge area and the dependent variable which is delay of expansion program. The six knowledge areas were found to have a significant effect on the delay of the expansion program, namely, project stakeholder, time, cost, resource, communication, and procurement. The regression analysis result showed that the six knowledge areas namely, project stakeholder, time, cost, resource, communication, and procurement, explained 55.9% of the variance in the delay of the expansion program. This indicates that these six project knowledge areas are vital for project managers to focus on if they want to reduce the delay in expansion program. The result show that the remaining project knowledge areas namely, scope, quality, risk, and integration have no significant effect on expansion projects delay. The finding opens a window for further in-depth studies to identify other factors that can cause delays in the expansion program. future research could focus on the impact of external factors such environmental, political and economical and others that may have a relationship with the expansion program delay.

Keywords: Project knowledge areas, Expansion program delay, Habesha Brewer, Regression Analysis,

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

From business perspective, organization can move from current state to desire state to achieve specific objective by applying different Program or projects. The program is a collection of related projects managed in a coordinated manner to achieve specific goal and is not being managed separately (PMI, 2017). Similarly, project is defined as a temporary endeavor which have a connected sequence of activities and a range of resources are designed to achieve a specific objective and results, which operates with in time, scope, cost and quality constraints and often introduce changes (Lake, 1997)

Project success can be defined as meeting the desired outcome and objectives as specified in the agreed project plan. Failure to achieve targeted time, budgeted cost, and specified quality result in various unexpected negative effects on the projects. Usually, when the projects are delayed, they are either extended or accelerated the time and invite to the additional cost (Hamzah et al., 2011). Therefore, a project performance can be saying successful if it has accomplished its technical performance, maintained its schedule, and remained within budgetary (Frimpong et al., 2003).

One of the poor project performances is project delay which results in several economic, political, social, and other consequences. Different scholars and researchers in project management have provided definitions of the concept of delay. For example, (Meena & Suresh Babu, 2015) define delay as the time overrun either beyond completion date specified in a contract or beyond the date that the parties agreed upon for the delivery of a project. One of the major risk factors for consultant, owner and contractor that cause difficulties within the project which leads to cost and time overruns are project delays. Even though, projects are being said successful when it completes on time, with budget, with specifications and stakeholder satisfaction, most of the projects were not finished as per agreed up timeline (Feresew, 2022).

Literature show that project implementation in developing countries as well as in Africa experience frequent delay. According to Ammar and Alghonamy (2015), time performance is

being considered as the most frequent and serious problem in Saudi Arabia. Only 30% of construction projects were completed on the specified timetable. Similarly, studies made in Africa have shown frequent construction delay and as per the data indication that 75% of the construction project exceeded the original time (Frimpong et al., 2003). According to Dula and Ababa (2021), Ethiopian Project implementation delay is common in all sectors and it is very rare that construction projects are completed on the time specified or agreed upon. (Hareru et al., 2016)), studies investigating the causes of construction delay in Ethiopia, showed that in Ethiopia only 8.55% projects have been finished to the original targeted completed date.

One of the most important criteria in assessing construction project success is schedule performance. To get a better schedule performance, Identifying the major factors affecting schedule performance will be the first step and implementing appropriate management measures to address issues related to the major construction delay factors to achieve good schedule performance will be the next step. Study made in Portugal, The UK and USA, identified ten top construction delay out of possible 42 reported in literature and the factors were Change of scope, mistake in design document, inadequate information, late approval of work, ineffective planning and scheduling, shortage construction of materials, low skilled labor, late permit approval, finance and payment of completed work and poor site management and supervision (Choong Kog, 2018).

Similarly, (Alhaji Mohammed, 2012a) investigated the cause of delay in Nigeria, and the most important delay factors which were ranked are improper planning, lack of communication, design error and shortage of supply. Like other African countries, the main critical cause of construction delay in Ethiopia are (1) Difficulties in financing project, (2) escalation of material price, (3) ineffective project planning, (4) schedule & resources management, (5) Delay in progress payment for completed work, (6) lack of skilled professional (Koshe & Jha, 2016).

Expansion is a critical aspect of many organizations as they seek to remain competitive and meet customers' changing needs. Expansion projects can range from opening new stores to introducing new products or services to the market. Such initiatives require the integration of different project knowledge areas to ensure effective management, timely delivery, and overall project success. However, expansion projects are often complicated and cause significant challenges to organizations due to their nature and scale.

Project management plays a critical role in determining the success of expansion projects. There are numerous factors that affect the success of a project, including planning, communication,

risk management, project scope, and monitoring and control, among others. Managing an expansion project also requires the integration of various knowledge areas to ensure that the project is completed on time and within budget(Lake, 1997). Research shows that project management knowledge areas significantly impact project outcomes, including completion time, budget, and performance. Yet, despite the benefits associated with using best practices, many organizations still struggle with continuous project delays and failures in their expansion programs. Therefore, organizations must prioritize project knowledge areas to improve their chances of success(Tesfaye, 2021).

Habesha brewery share company management team have made the decision to undertake expansion projects as a means of increasing their market share and ultimately achieving their strategic objectives. However, HBSC faces challenges in successfully executing these expansion projects, which can result in lost revenue, wasted resources, and negative impacts on the organization's reputation. The expansion program was planned to be completed in 2023 to make the current 1 million to 4.5 million hector liter annual production. However, evidence from the project management office shows that only 33% of planned work is completed (Habesha brewery expansion project office,2022). The aim of the research study is to provide actionable insights into the effect of the 10Project management Knowledge Areas such as project stakeholder management ,project scope management, project schedule management ,project cost management ,project quality management ,project resource management ,project communication management ,project risk management ,project procurement management and project integration management on the delay of an expansion projects, which will enable project managers to develop more effective strategies, reduce risks, and ultimately increase the success rate of expansion program.

1.2 Statement of the Problem

Construction delays are occurring in every phase of a construction project and are also common problems in beer industries expansion projects. In addition to this, it is well known that the delay in construction projects is the major cause of project failure. If the delay is not identified and the corrective project management decision is not taken in time a project may incur extra cost, time, and dissatisfaction of all parties.

According to Choong Kog(2018) ,project implementation delays are a common problem in the developed and developing countries and understanding the major delay factors are the first step to minimize the unnecessary loss in construction projects. Similarly, construction projects implementation in developing counties experience frequent delays(Matin, 2016) .In addition to this, project implementation delay is most common in Africa in general (Frimpong, 2018) and in Ethiopia in particular (Nega, 2008).

According to Habesha breweries share company strategic management plan, the company was planned to expand the existing 1 million hector liter /year to 4.5 million hector liter /year. The expansion program consists of raw material and silo plant project, new brewhouse plant project, fermentation and bright beer tank project, new filtration plant project, new utility plant project, new packaging plant project and civil construction for all plant. The projects are planned to be started and completed 2018 and 2023 respectively.

However, evidence from the project management office shows that only 33% of the total scheduled activities are completed (Habesha breweries share company project management office,2022).

As per the researcher knowledge, there is limited research on the impact of these project 10 knowledge areas on the delay of expansion program. However, the previous studies which made by (Demirkesen & Ozorhon, 2017),(Kebede, 2019),(Dino & Ababa, 2022),(Abusafiya & Suliman, 2017),(Assefa, 2021a),(A. Kuma, 2019),(G. Kuma, 2018a),(Mekonnen, 2021),(Mambwe et al., 2020) focused on integration management, scope management, time management, cost management quality management, resource management, communication management, risk management procurement management and stakeholder managements respectively with project success and didn't consider the 10-project knowledge areas a whole with project success. Therefore, the problem addressed by this research study is determining the effect of the ten Project Knowledge Areas on the delay of an expansion projects for the case Habesha breweries share company.

1.3 Objectives of the Study

1.3.1 General objective

The general objective of this study is to examine the effect of ten project management knowledge areas on the delay of expansion projects in Habesha breweries share companies.

1.3.2 Specific objective

There are the following specific objectives.

- To analyze the effect of stakeholder management on the delay of expansion programs.
- To examine the effect of scope management on the delay of expansion programs.
- To evaluate the effect of time management on the delay of expansion programs.
- To determine the effect of cost management on the delay of expansion programs.
- To examine the effect of quality management on the delay of expansion programs.
- To determine the effect of risk management on the delay of expansion programs.
- To evaluate the effect of communication management on the delay of expansion programs.
- To determine the effect of procurement management on the delay of expansion programs.
- To investigate the effect of resource management on the delay of expansion programs.
- To determine the effect of integration management on the delay of expansion programs.

1.4. Research Hypotheses

The study postulated and tested the following 10 hypotheses.

- Hypothesis 1 – Stakeholder management has a positive and significant effect on delays in expansion program.
- Hypothesis 2 – Scope management has a positive and significant effect on delays in expansion program.
- Hypothesis 3 – Schedule management has a positive and significant effect on delays in expansion program.

- Hypothesis 4 – Cost management is positively linked with delays in expansion program.
- Hypothesis 5 – Quality management has a positive and significant effect on delays in expansion program.
- Hypothesis 6 – Resources management leads to a higher likelihood of delay in the expansion program.
- Hypothesis 7 – Communication management is positively associated with delays in expansion program.
- Hypothesis 8 – Risk management has a positive and significant effect on delays in expansion program.
- Hypothesis 9 – Procurement management is positively linked with delays in expansion program.
- Hypothesis 10 – Integration management has a positive and significant effect on delays in expansion program.

1.5. Significance of the Study

The aim of this study is to examine the impact of ten project knowledge areas on the delay of expansion programs. The study conducted an explanatory research design to investigate the explanatory variables' effect, including scope management, time management, cost management, quality management, risk management, communication management, procurement management, stakeholder management, integration management, and resource management. The finding of this paper will give benefit to public or private companies and researcher. Company leaders may use this knowledge to address the concerns of the employees and to improve the public as well as private project performance. In addition to this, Employees will also benefit from this paper through resolving the gaps and the project delay factor that can affect the overall project performance.

To summarize, the findings of the results provide valuable insights for the researchers and practitioners who are interested project delay, how best they can utilize their limited resources and to pay adequate attention to those factors that are most likely to have an impact upon the implementation of various projects. As this study attempts to contribute something towards filling the research gap on the topic area the researcher strongly hopes

that the findings have significance in addressing the problem better and in indicating solutions. The researcher also hopes that the findings of this study will serve as additional reference material for those who conduct research on a similar topic in the future.

1.6. Scope of the Study

The study was focus on the effect of 10 project management knowledge areas (stakeholder management, scope management, time management, cost management, quality management, resources management, communication management, risk management, procurement management and integration management) on the delay of expansion projects in one brewery. The focus was on understanding how these knowledge areas contribute to the projects' delay and identifying any pattern or correlation. The research used an explanatory research design, aiming to explain the relationship between variables and qualitative research approach, which involves collecting primary data via survey questionnaires and analyzing numerical data. The study was based on literature review and an empirical study to analyze project delays in expansion projects of HBSC.

1.7. Limitation of the study

The study was based on a limited sample size, selected according to specific industries, projects, or organization, which may limit the generalization of the results. All possible factors that may affect project delay, such as external factors, political, legal, or environmental issues, or project specific variables are not considered. In addition to this, the study didn't explore the effect of project knowledge areas on other project management outcomes or objectives, such as project success, customer satisfaction, or economic performance.

1.8. Organization of the Study

This study is organized in five chapters. Chapter one discusses the background of the study, statement of the research problem, the general and specific objectives, the research hypothesis, significance of the study and the scope and limitation of the study. Chapter two presents a detailed review of the related literature and a discussion of the conceptual or theoretical framework of the study. Chapter three discusses aspects of methodology used in conducting the research. Chapter four deals with the discussion and analysis of findings, and chapter five presents the conclusion and recommendation.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This section provides a review of related literature that includes both theoretical and empirical components and was utilized to guide the investigation. Project and program, types of delay cause in construction projects, project management knowledge areas, and other topics are explored in this section. This section also discusses previous empirical findings on the study's topic as well as similar research.

2.2 Theoretical literature review

2.2.1 Project and Program management

Project is defined as a temporary endeavor which has a connected sequence of activities and a range of resources are designed to achieve a specific objective and results, which operates within time, scope, cost and quality constraints and often introduces changes (Lake, 1997). Certain characteristics distinguish a project from other initiatives. Some characteristics mentioned by (Lake, 1997) are: Projects are unique and non-repetitive, Projects are composed of interdependent activities, Projects have a clear start and finish time, Projects have a life cycle [a beginning and an end, with several distinct phases in between], Projects create a quality deliverable, Projects are bound in terms of resources (both human and non-human), A project involves risk and uncertainty and a project requires teamwork.

Program is defined as a group of related projects designed to achieve a common goal and it is managed in a manner that accepts and adapts to change as necessary to optimize the delivery of benefits as the program's components deliver outcomes and a project manager will be assigned for each project within a program (Larson et al., 2011). Similarly, according to PMI (2017), a program is a group of related projects that are managed in a manner that accepts and adapts to change as necessary to optimize the delivery of benefits as the program's components deliver outcomes.

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements and involves coordination of group activity where the manager plans, organizes staff, directs and controls to achieve an objective with constraints on time, cost, and performance of the product. In addition to this, project

management focus on interdependencies within a project whereas program management focus on the interdependence between projects(PMI, 2017).

Project management literature identifies ten critical knowledge areas, including project integration management, project scope management, project time management, project cost management, project quality management, project human resources management, project communication management, project risk management, project procurement management, and project stakeholder management. These knowledge areas impact project outcomes in several ways, and knowledge gaps within them could lead to delays or even project failure(PMI, 2017).

2.2.2 Project stakeholder management

Project stakeholder management involves the activities needed to identify the people, group, or organization that could impact or to be impacted by the project, to analyze stakeholder expectations and their impact on the project and to develop appropriate management strategies for effectively engaging stakeholders in project decision and execution. The activities which are included are. Identify stakeholders which can be benefited or affected by the project, Analyze the stakeholder interest and power, manage stakeholder engagement and Monitor stakeholder engagement by providing the necessary project update.

2.2.3 Project scope management

The activities needed to ensure that the project includes all the work required, and only the work required, to complete the project successfully is called project scope management(PMI, 2017).The following activities are expected in the project scope management: Creating scope management plan that shows how the project scope will be defined, validated, and controlled, Determine and document stakeholder needs and requirements to meet project objective, Prepare user requirement specification, Determine and define project scope, Prepare work breakdown structure, Determine and define acceptance criteria, Manage and monitor project scope to the scope baseline.

2.2.4 Project time management

Project time management refers to all the procedures and activities that must be completed for the project to be completed on time. The activities are : Establishing the procedure and documentation for planning, developing, managing, executing, and controlling the project

schedule, Identify and document the specific action to be performed to produce the project deliverables, Identify and document the relationship among the project activities, Estimate the number of work periods needed to complete individual activities with the estimated resource, Analyze the activity sequence, durations, resource requirements and schedule constraints to create project schedule model for project, Monitor the status of the project to update the project schedule and manage the changes to the schedule baseline.

2.2.5 Project cost management

Project cost management involves the activities of planning, estimating, budgeting, financing, funding, managing, and controlling expenses for the project to be completed within the allocated budget. The activities which are required during this stage are: Define how project cost will be estimated, budgeted, managed, and controlled, develop an approximate of monetary resource needed to complete the project work, Aggregate the estimated cost of individual activities and establish an authorized cost baseline, Monitor the status and update the project costs and manage changes to the cost baseline.

2.2.6 Project resources management

Project resource management includes the activities to identify, acquire, and manage the resource required for the successful completion of the project. it consists :Defining how to estimate, acquire, manage, and utilize physical and team resource, Estimate team resource, type and quantities of material, equipment, and supplies necessary to perform project work, Obtaining team members, facilities, equipment, materials, supplies, and other resource necessary to complete project work, Improve competence, team member interaction, and the overall team environment to enhance project performance, Track team member performance, providing feedback, and resolving issues and manage team changes to optimize project performance, Ensure that the physical resource assigned and allocated to the project are available as planned, as well as monitoring the planned versus actual use of resources, and perform corrective action as necessary.

2.2.7 Project communication management and project implementation

The processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Effective communication between team members and stakeholders bridges the distance between them and creates

channels for exchanging ideas and viewpoints. Although all areas of knowledge are vital in projects, communication may be the most significant because it informs all aspects of the project (PMI, 2017).

2.8.8 Project risk management and project implementation

Project risk management entails a few steps, including risk management planning, identifying, and assessing risks, and implementing risk management controls. PRM deals with the processes of ensuring a proper risk identification, analysis, and control during different phases of project (PMI, 2017). It enables the project team to take proactive responses and control the impact of risk events (Larson et al., 2011). It has been identified that the risk factors should be dealt with in the early phases of a project if risk management is to be effective. By measuring and integrating the likelihood of occurrence, project risk management focuses on recognizing which risks may have an influence on documenting the project's features, ranking risks for further analysis or actions, and prioritizing risks for further analysis or actions.

2.2.9 Project procurement management and project implementation

The process needed to purchase a product or service, or results from outside the project team. Moreover, the management and control process needed to develop and administer agreement such as contracts, purchase orders and service level agreements are included in project procurement management. the activities which will be done on this stage are:- Document project procurement decisions, specifying the approach and identify potential sellers, Obtain seller responses, select a seller, and awarded a contract, Manage procurement relationships, monitoring contract performance, make changes and correction as appropriate, and closing out contracts together with procurement team.

2.2.10 Project integration management and project implementation

Several project management control and processes are included in project integration management, including developing project charters, developing project management plans, directing, and managing project work, monitoring, and controlling project work, performing integrated change control, and closing project phases. Within the project management process categories, project integration management comprises the processes and activities for

identifying, defining, combining, unifying, and coordinating the numerous processes and project management activities(PMI, 2017)

2.2.11 Types of construction delay

Depending on the type and magnitude of the effect that the process will have on the project and responsibility for the delay among the stakeholder, delay is classified as critical or non-critical, excusable, or non-excusable, compensable, or non-compensable(Meena & Suresh Babu, 2015)

2.2.11.1 Critical and non-critical delay

The delay that affects the project schedule time are considered as critical delays. Likewise, if the delay does not affect the project completion time are non-critical delay. Financial related, material availability related, project management related, and environmental factors are examples of critical factors.

2.2.11.2 Excusable and non-excusable delays

Delays which are beyond the control of contractors or subcontractors. like, Weather condition, fire, political unrest and soon. whereas things which are under the control of the contractor or subcontractors are non-excusable delay. Rework, poor project management, payment related issues and so on.

2.2.11.3 Compensable and non-compensable delay

When the delay is cause by the owner or owner agent is called Compensable delay during which the contractor is entitled to time extension and other additional compensation like payment for the delay. Late approval of design and late payment from the owner are examples of compensable delay. In contrast to this, non-compensable delays are things which are beyond the control of both the owner and the contractor. Political related issue, weather and economical related issues are the example of this delay(Alhaji Mohammed, 2012b)

2.3 Empirical Literature Review

Researchers in different countries have done different investigations on factors which can affect the project completion time from different views. In this sub section, literature which are related to delay of construction projects are reviewed.

The study conducted in south Africa by Mambwe et al., (2020) concluded that stakeholder engagement and project schedule have a positive correlation after collecting and analyzing the primary and secondary data with semi structured questionnaire with a response rate of 98%. Similarly, Stakeholder management process in Ethiopian construction sector are not implemented according to the standard. In addition to this, Adequate funds and other non-financial assistance are not being given to support the project stakeholder management effort. As a result, most the projects are not performing according to the baseline (Mekuria, 2020).

Study made by Ratta (2017), project scope management processes and project performance has statistically significant which means project scope management process has significantly and positively impact the performance of the project and the researcher suggested that project managers should implement project scope management system in their organizations to improve performance. Planning of scope, collecting of requirement, defining of scope, work break down structure, validate scope and control scope are the processes which are needed to be complete the project successfully.

According to Kebede, (2019), performance of projects or program are affected by lack of scope management plan, stakeholder requirement documents, proper defining of scope, work break down structure, validating and controlling scope which are the process of project scope management.

Among the studies conducted in other parts of the world is the research (Choong Kog, 2018), 18% of the construction delay in Portugal and UK under the contractor categories are ineffective planning and scheduling, poor site management and supervision, late delivery /shortage of construction material, unqualified workforce and subcontractor problems which are related with mechanical and electrical construction.

The study by Dino and Ababa, (2022) explained the relationship between time management and project success. Since plan schedule management, defining activities, sequencing activities, developing, and controlling schedule which are time management process are not practice according to the standard in Telcom expansion project, expansion project was not completed as

per the timeline. Finally, the study revealed that time management and project success have a strong relationship.

According to Abusafiya and Suliman (2017) ,any financial related problem in project or program will cause delay and dissatisfaction. The study recommended tight control of any construction project can limit variation in works during construction and it is necessary for successful financial outcomes of project/program. Similarly, (Nega, 2008)identified the most common effect of cost management which are Delay, supplementary agreement, adversarial relations among stakeholders and budget shortfall of project owners.

Project quality management factors like Failure to re-design business Processes, Inability to avoid technological Bottlenecks, Data quality issues, Failure to adhere to standardized specification which the software supports e highly contributed to the project implementation delay of the ERP system of Commercial bank of Ethiopia(Mekonnen & Worku, 2019). Research conducted by(Worku, 2019) on assessment of Project Quality Management Practice: In the Case of Selected Private Banks of Ethiopia, indicates that those private banks do not have separate project quality management process which includes Plan Quality Management, Manage Quality, Control Quality and have bad project performance.

Construction projects are employing huge resources of men, materials, and machine. Because of the resource driven nature of construction management, the project manager should develop a plan of action for directing and controlling resources of works, machine, and materials in coordinated and timely manner so as to deliver a project within the specified timeline. Time and cost are directly dependent on the availability of resource and successfully implementation of a construction projects/program are not only depending on the quality and quantity of work rather it is largely depending on availability of resource(Nagaraju et al., 2012).Similar study conducted in Ethiopia by (Assefa, 2021a) revealed the important of resource management for successful completion of any construction projects or program .Allocation of resources for processes are necessary in construction domain to complete the project with in the scheduled time.

Study conducted in Kuwaiti by Soliman (2017), revealed the usage of old type of filling system instead of new ones, lack of progress site meetings, bad quality of drawings – documents, contractor delay in preparing tables, as well as drawings, information needed from, and low experience of the supervision staff are the effect of communication problems that resulted project delay. similar study made in Ethiopia by (A. Kuma, 2019)show that the practice of

project communication management, communication method, and communication channel had statistically positive significant influence on project performance.

According to Khan (2017), time extension or project delay is a mutual problem of construction industry. The delay is caused by several different risks involved on construction sites are Financial Risks, External Risks, Labor Risks, Design Risks and Technical Risks.

As per the research made in Ethiopia by(G. Kuma, 2018a) ,effective implementation of project risk management element (Risk planning, Risk Identification, Risk analysis and Risk control and Response) has significant effects on project completion within the scheduled time and budgeted cost.

Today's markets are highly competitive and have an uncertain business environment and clients are demanding their project to be completed on schedule, with in budgeted cost and right quality. Hence, it is very important at beginning of the project to consider and carefully check all the factors when selecting procurement approach because the procurement management system will have effect the performance of the project(Abdul Rashid et al., 2006).

According to Mekonnen (2021),supplier sourcing, inventory management, need assessment and contract management practice or procurement management practice a whole has positively relate with each other and interlinked significantly with project performance. In addition to this the researcher recommended effective implementing the procurement management processes to complete the project as per specified timeline.

According to Demirkesen and Ozorhon (2017), Development of Project Charter, Knowledge Integration, Process Integration, Staff Integration, Supply Chain Integration, and Integration of Changes have a considerable impact on project management performance. Similarly Study by(Mamo, 2018) indicates a positive and significant relationship between Project Initiation, Project Planning, Project Execution, Monitoring and Control and Project Closure on project success of the data center project which implies the increase in Project Initiation, Project Planning, Project Execution, Monitoring and Control and Project Closure inevitably increases in the project success of the data center project.

2.4 Summary and Research Gap

Many organizations have made the decision to undertake expansion projects as a means of increasing their market share and ultimately achieving their strategic objectives. However, many of these organizations face challenges in successfully executing these expansion projects, which can result in lost revenue, wasted resources, and negative impacts on the organization's reputation. In many cases, these challenges can be attributed to a lack of effective project management methodologies and strategies. The 10 Project management knowledge Areas have been identified as a crucial component of effective project management methodologies. Each of these knowledge areas can contribute to the delay of program. For example, poor integration management can result in communication breakdown and missed milestones. Similarly, poor scope management can lead to scope creep and changes can impact the timeline. Time management is critical to ensuring that deadlines are met, and delays can occur if there are issue with scheduling or resource allocation. Cost management can impact on the timeline if unexpected expenses arise or if the budget is not sufficient to cover all necessary expenses. Quality management can also impact on the timeline if there are issues with products or service that need to be addressed. Human resource management can lead to delays if there are issues with team morale or if the team lacks necessary skills or resources. Communications management can result in delay if there are breakdowns in communication between teams' members or stakeholders. Risk management is crucial for identifying and mitigating potential risks that could impact the timeline. Procurement management can cause delays if there are issues with getting necessary supplies or service. stakeholder management can lead to delay if stakeholders are not engaged, informed, or satisfied with the program progress.

As per the researcher knowledge, there is limited research on the impact of these project 10 knowledge areas on the delay of expansion program. However, the previous studies which made by (Demirkesen & Ozorhon, 2017),(Kebede, 2019),(Dino & Ababa, 2022),(Abusafiya & Suliman, 2017),(Assefa, 2021a),(A. Kuma, 2019),(G. Kuma, 2018a),(Mekonnen, 2021),(Mambwe et al., 2020)focused on integration management, scope management, time management, cost management quality management, resource management, communication management, risk management procurement management and stakeholder managements respectively with project success and didn't consider the 10-project knowledge are as a whole

with project success. Hence, there is a conceptual and knowledge gap which the current study attempts to fill up. Therefore, the problem addressed by this research study is determining the effect of the 10 Project management Knowledge Areas on the delay of an expansion program.

2.5 Conceptual Framework

The following conceptual framework has been established based on the theoretical literature review. As a result, project delay is a significant denominator that can have a negative or positive impact on a project's completion time compared to its planned duration.

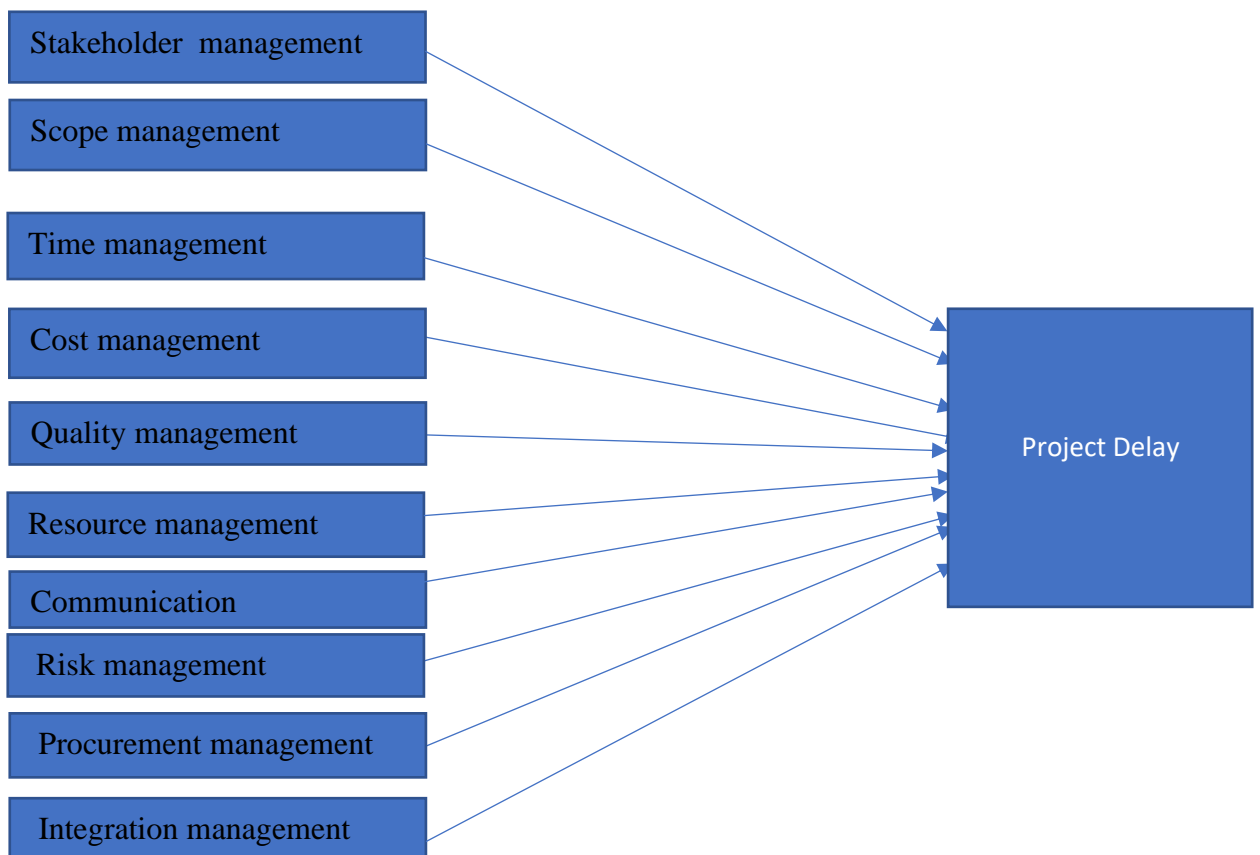


Figure 1.1: Conceptual framework of the study

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology that was used in conducting the study. The chapter has parts that discuss: the research design, research approach, sampling design, data type and sources, data collection method, data analysis methods, validity and reliability and ethical issues.

3.2 Description of the study

3.2.1 Background of the organization

The study was conducted in Habesha breweries share company, Debre Birhan, which is in the Semen Shewa Zone of Amhara Region, about 120 kilometers northeast of Addis Ababa on Ethiopia. According to the project management office (PMO,2019), the existing plant capacity of the breweries will be expanded from 1 million to 4.5 million hector liter brewery per year by doing the following different expansion projects.

1. Expansion program on brewing which includes raw material handling project, brew house project and Raw material storage project. The total budget amount for the program is 40million Euro.
2. Expansion program for packing which includes Return bottle line project and Keg line project. The total budget amount for the program is 30million Euro.
3. Expansion program for Utility which include water treatment expansion project, Co2 recovery expansion project, compressed air expansion project, Boiler plant expansion project, power supply unit expansion project, wastewater treatment expansion project and water supply project. The total budgeted amount for the program is 44 million euro.
4. Expansion program for civil which include concert road project, office building project, concrete tank project and steel structured shade project. The total budgeted amount 23 million Euro.

3.3. Research design

A research design constitutes the conceptual structure within which research is conducted and the blueprint for the collection, measurement, and analysis of data. It includes an outline of what the researcher did from writing the hypothesis and its operational implications to the final

analysis of data(Kothari, 2014) .In the data collection, analysis, presentation and discussion, this research has an explanatory research design to meet specific objective. Explanatory design looks for cause and effect relationship. Specify the nature and direction of the relation between variables are being considered in research hypothesis. The researcher used descriptive and explanatory research design together since the major purpose of the descriptive is to describe the characteristics of population or phenomenon.

As previously stated in chapter one, the general objective of this research is to examine the effect of the 10 project knowledge areas on delay of expansion program: As it attempts to find out the relationship or association between the variables and the frequency with which they occur. This study is explanatory /causal in its approach. Hence, explanatory research along with descriptive analysis is an appropriate research design because this study attempted to investigate the influence of factors affecting expansion program delays, i.e., to study the relationship between the stated dependent and independent variables of the study.

3.4. Research approach

According to Creswell, (2009),scientific research approaches has been classified into three: quantitative, qualitative, and mixed research. Quantitative research is an approach for testing objective theories by examining the relationship among variables, which can be measured and analyzed using statistical procedures. The main data collection for this research method is surveys, questionnaires, and online research. Qualitative research is an approach for exploring and understanding the idea reason, and one's motivation in relation to specific variables. Interview, focus group and observation are the data collection for research method. whereas mixed research approach involves quantitative and qualitative forms of primary data in a single study. Hence, for the sake of attaining objectives of the research and answering research questions a quantitative research approach was used. It was applied to get insight and understanding of the situation in expansion program delay of Habesha breweries share company.

3.5 Data type and source

The data used to answer the research question are mainly primary data collected through questionnaires which were distributed among 203 respondents working in head office and factory. The researcher took the necessary caution to check for its reliability, suitability, and adequacy. The study unit of analysis was individuals namely employees from client side, consultants, and contractors of expansion program of Habesha breweries share company.

3.6. Population and sampling

Population is the sum of all the entities under consideration by researcher (Kothari, 2014). The target population of the study consisted of employee from client side, consultant, and contractor. According to the employees from client side, consultants, contractors and stakeholders, there are **412** individuals in the study area.

The sample frame was obtained from March 2023 employee payroll, and the sample was taken from head offices.

According to Kothari (2014), sampling is a process of selecting a few individuals for study in which the individual selected represent the large group from which they are selected. For the target population, which is not large in number, 5%-10% of the total could be enough. The actual sample is computed using the formula is presented below:

$$n = \frac{N}{1 + N(e)^2}$$
$$n = \frac{412}{1 + 412(0.05)^2}$$
$$= 203$$

Where n = the sample size

N = size of population

e = the level of accuracy (e = 0.05)

The researcher took 203 respondents as sample size out of the total population 412 which was selected for the survey as per the sample size determination formula.

This study Used probability sampling methods. Stratified random sampling technique was functioned particularly branches of the surveyed project and its associated project actors-employees of client, consultant, and contractors. Employees' current working position as the basis for selecting samples from the target population among probability sampling techniques. This sampling technique is important to select from senior, middle level and other staff equally based on their proportion as compared to others. All targeted employees and officials have got the chance to include in the survey. Then after, the researcher constructed a proportionate stratified sample to determine the sample size from each branch and select by systematic random sampling technique. In addition, it then used simple random sampling technique to recruit employee and project officials for participation in the study. The rationale behind using

systematic random sampling technique is because it helps the researcher to approach employees during the service hours thereby increasing the response rate.

The expansion program has three project actors as per their involvement in 2018 up to 2023 activities. From the total sample population, the number of respondents to be included from each selected actor was decided based on the proportion of total actors at each project performer list.

Overall, stratified proportion sampling which is based on their location was used to get information from expansion program of HBSC to collect the data from the target population. This technique is preferred because it is used to assist in minimizing bias when dealing with the population. With this technique, the sampling frame can be organized into relatively homogeneous groups (strata) before selecting elements for the sample.

3.7. Data collection tools

This study used survey questionnaires and document review. Details on each data collection tool are presented in the following sections.

3.7.1 Questionnaire

Questionnaire is one of key data collection methods used in this study. The primary data collected through closed ended questionnaires. All the items were measured by using a five-point Likert-type response scales, anchored at 5 strongly agree and 1 strongly disagrees. The questionnaire with mainly closed ended questions was used to collect data from respondents. This study used closed questions as it had some advantages: easy to process answers; enhances the comparability of answers and makes them easier to show the relationship between variables. It is better than an open question for this research. The questionnaires were divided into three sections to capture the background information of the respondents, causes of program delays.

3.8. Validity and reliability

3.8.1 Assessing Validity

Validity means an instrument's ability to measure what is meant to be measured. There are three types of validity in a study: content validity, predictive validity, and construct validity. This study addressed face and content validity through the review of literature and adapting instruments used in previous research. In addition, 20 individuals including projects leaders, experts, students from master's degree studies and client representative participated to validate the questionnaire before data collection were authoritatively administrated.

To check instrument validity, a pilot test was conducted with twenty questionnaires; preliminary draft of the questionnaire was pre-tested to improve upon the clarity of the question items. Non-sample respondents were given the questionnaire to read and comment on the meaningfulness of the question items and their comments were incorporated. Accordingly, repeated questions were removed, and amendments were made. The size was guided by the suggestion by (Saunders et al., 2009) that minimum of twenty (20) members of pre-testing is adequate.

3.8.2 Reliability Test

Reliability is the extent to which a study's operations can be repeated, with the same results and it also involves the accuracy of the chosen research.

Table 1: Reliability statistics test result

Variables	Reliability Statistics	
	Cronbach's Alpha	N of Items
Unsuccessful Stakeholder management	.900	6
Poor scope management	.873	8
Insufficient Schedule management	.849	8
Inadequate cost management	.938	6
Poor Quality management	.889	8
Ineffective resources management	.905	8
Poor Communication management	.828	6
Insufficient risk management	.845	8
Faulty Procurement management	.916	8
Ineffective integration management	.813	6
Project delay	.880	6

Source: Survey result ,2023

The overall Cronbach alpha of the scales used in this study was rated as excellent. Consequently, it indicates the reliability of the scales was very high depicting a very strong internal consistency

among the measurement items and the selected instrument accurately measures the variables selected. In this regard, values of 0.876 or greater were considered all constructs depicted that the value of Cronbach's alpha are above the suggested value of 0.876 thus it can be concluded that the study was reliable to capture the constructs.

Data was checked for consistency and completeness by supervisors, double-checked by the principal investigator. Data quality was assured using different techniques such as training was given to data collectors about the contents of the questionnaire and frequent supervisions were done. Data collectors also assisted the respondents in case of difficulties. Problems encountered at the time of data collection were reported immediately and appropriate actions taken. Properly designed questionnaires and in-depth interview guides were prepared; and pretests were done prior to the study and corrections also made. The questionnaires were checked for missing values and inconsistency. Questionnaires that were found to have lots of missing values and inconsistencies were excluded from the study and considered as non-respondent.

3.9. Method of data analysis

After the collection process of relevant data was completed, the proper method of data analysis was used. The analysis indicated transformation of raw data into a form that makes it easy to understand and interests it. First, the empirical data was analyzed by descriptive statistics (frequency, mean and standard deviation). Next, the data was analyzed using statistical techniques of correlation analysis as the study used Likert scale, Pearson correlation were used.

3.11 .1 Data preparation

Data was entered by the principal investigator using SPSS V.25 for cleaning and analysis. The accuracy of data entry was checked by running frequency analysis and making range checks every time. Errors of data entry were corrected by cross-checking with the filled questionnaires.

3.11.2 Descriptive analysis

Descriptive statistics included the mean and standard deviation used to capture the characteristics of the variables under study. It was displayed in a meaningful and understandable manner to assist in describing and interpreting the results of the research. Descriptive statistics

were computed to describe the socio-demographic characteristics of participants and to summarize the respondents' perception. The data was also collected qualitatively have been first transcribed into text, next organized based on the objective of the study and then was analyzed by coding, giving meaning, categorization, editing and through thematic organization and descriptive narration.

3.11.3 Analysis Using Inferential Statistics

Besides, inferential statistics like Pearson correlation and regression were applied to see the effect of the independent variable on the dependent variable. Inferential statistics include bivariate correlation, which is used to analyze the relationship of the independent variable. Besides, correlation and linear regression to test for relationships while a multiple linear regression model was used to determine the combined effect on the relationship between dependent and independent variables. Multiple linear regression also allows to determine the overall fit (variance explained) of the model and the relative contribution of each of the predictors to the total variance explained. When one selects to analyze his or her data using multiple regression, part of the process involves checking to make sure that the data he or she want to analyze can be analyzed using multiple regression.

3.11.4. Model Specification

Model specification - the statistical regression model of the study was based on the theoretical regression model. After results have been computed analysis of the research findings were done using multiple regression statistical analysis method. The relationship between delay variables and expansion projects delay is then mathematically described using multiple linear regression equation models as follows, based on the conceptual model of the study shown in equation 1 below.

$$Y_i = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5) + \beta_6(X_6) + \beta_7(X_7) + \beta_8(X_8) + \beta_9(X_9) + \beta_{10}(X_{10}) + e$$

Where.

- Y_i = Project Delay.
- X_1 = unsuccessful stakeholder management
- X_2 = poor scope management
- X_3 = insufficient schedule management

- X_4 = inadequate cost management
- X_5 = quality management
- X_6 = ineffective resource management
- X_7 = communication management
- X_8 = insufficient risk management
- X_9 = faulty procurement management
- X_{10} = ineffective integration management
- e- errors
- α is the intercept and β_1 to β_{10} are parameters

3.9. Variable Definition and Measurement

The data for the entire dependent and independent variables is collected using Likert scale. However, because our econometrics model developed above is a linear model, we should convert the ordered data into continuous form. Therefore, we first compute the mean values of each variable depending on response to the constructs. As it can be seen in the questioner, the dependent variable (expansion project delay) and the independent variables (the 10 project management areas) have constructs. The response to these constructs is ranging from 1 (strongly disagree) to 5 (strongly agree). This response, in the descriptive analysis, converted in mean values which later used to measure variables in the regression analysis and tests. As a result, all variables are continuous and measured as their mean values.

3.10. Ethical issues

Ethical approval was obtained from St. Mary University, Post Graduate Studies Program. Ethical letters or official permission were also obtained from various firms. Then after, the objectives and benefits of the research were discussed in detail with the selected organizations officials. Then, a similar discussion was held with officials and staff. The study considered the well-established and thorough research ethics reminds us that it is unethical for a researcher to present a biased report or not to report the truth as it is.

Participation in the study is voluntary and confidentiality of the information was assured during as well as after data collection. The participants were informed about their right not to

participate, privacy, risk, and no direct benefits of the study and not to answer any question or all the questions. Data collectors obtained verbal consent from employees after informing them about the nature of the study and that their participation was voluntary. The information sought was to be used for any other purpose than that to which participants consented and will not be passed to a third party. After the successful thesis defense and approval, Academic Commission and the University Senate, the questionnaire will be incinerated in a secure manner.

CHAPETR FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the findings of the study, followed by their interpretations and discussion as compared to previous studies. It includes the frequency of response rate and respondents' profile of sampled respondents as well as response analysis by descriptive statistics followed by regression analysis. It also contains qualitative data analysis to answer the research objective.

4.2 Response rate

The survey questionnaire is being prepared, filled in and administered in the online platform by sending the link via emails from April– May 2023, interested participants being given enough time to fill in the questionnaire. Response rates are presented in more detail below.

Table 2: Response rate

No	Description	Distributed Questionnaires	Returned	%
Distribution and returns of questionnaires by project actors				
1	Client	150	140	93
	Employees	130	122	93
	Managers	20	18	90
2	Contractors	20	13	65
	Top Local Firms	15	10	66
	Active Foreign Firms Representative	5	3	60
3	Consultants	10	6	60
	Experts	10	6	60
4	Stakeholders	23	12	52
	Government Officials	5	2	40
	Government Workers	13	8	61
	Others	5	2	40
Response Rate		203	171	84

Source: Survey result ,2023

A total of 203 online questionnaires were distributed to the respondents with close follow up and 171 respondents properly filled and returned the questionnaires in suitable form; and were used to do the analysis. This indicates that eighty four percent (84 %) response rate was attained; it meant most of the total targeted respondents participated in the study.

4.3 Respondents' profile

This part of the data presentation summarized demographic profiles of the respondents, i.e., distribution of respondents in sex, age, and educational, marital status as well as their contact years with surveyed project. In view of that, their responses are presented in the following table and followed by the implication of the responses.

The study was enchanted that most of the respondents were university graduates (well educated), worked or involved one way or another with the expansion program of Habesha brewery share company. This shows that the researcher was not biased and collected the data considering all the respondents irrespective of their gender. It was believed that the majority of the respondents could understand the subject under study which is impact 10 project knowledge are on the delay of expansion program. This show that the study providentially included those

employees who have extensive experience surveyed project get better picture of the expansion program Table 3: Demographic profile of the respondents.

Variables		Count N	%
Sex	Male	126	73.7%
	Female	45	26.3%
Age	less than 30	77	45.0%
	31-50	88	51.5%
	above 50	6	3.5%
Educational level	below high school	1	0.6%
	Diploma	59	34.5%
	Degree	96	56.1%
	Masters	15	8.8%
	PHD	0	0.0%
Marital status	Single	80	46.8%
	Married	75	43.9%
	Divorced	16	9.4%
Experience with Habesha breweries	less than 1 year	8	4.7%
	1- 5 years	109	63.7%
	5 -10 years	49	28.7%
	above 10 years	5	2.9%

Before analyzing the data, the background information on the staff at different levels has been shown throughout the above table. Findings of this study shows that, out of 171 the total of employee's respondents of this study, 45 (26.3 %) in number of the respondents are females and 126 (73.7 %) of the sampled respondents are male. the results show that male project participants or actors could be controlling the engagement in expansion program at surveyed project level. Accordingly, the percentages stipulate an increase in the number of men engaging in expansion program at surveyed project level undertakings. This could be recognized to further availed participation and employable in similar projects through various including funds educational and financial support to women hence empowering more women to engage in more expansion projects.

The above table shows that, among 171 sampled respondents, 45 % of the total respondents were of age below 30 and above 18 years or there were young adults, 51.5% of them were of age 31 to 50years or middle-aged adults, and only 3.3 % of the respondents were older adults or aged older than 50 years. This could be considered the study gathered information from well experienced people who acquired knowledge in projects.

The above table displays that, among 171 sampled respondents, 34.5% had diploma, more than half of them (56.1 % of the total respondents) had first degree and 8.8% of them attended university postgraduate (masers and above) and this data shows that majority of the respondents were well educated. In the same way, most of the respondents (91 in number) are married and divorced and (80 in number) are single. In view of this, most respondents were married, showing that they have been exercising the role of accountability and responsibility and in better social relations they are taking part. Likewise, 92% of the sampled respondents had more than two years' working experience with projects.

4.4. Inferential Analysis

This study used two types of inferential analysis namely correlation and multiple regression analysis.

4.4.1 Correlation Analysis

The study uses scale typed questionnaire that is distributed to relevant respondents and responses of questionnaires encoded into the SPSS 25 version. The study intends to measure the strength and the type of relationship among the independent variables, Unsuccessful Stakeholder management, Poor scope management, Insufficient Schedule management, Inadequate cost management, Poor Quality management, Ineffective resources management, poor communication management, Insufficient risk management, Faulty Procurement management, Ineffective integration management versus the dependent variable namely project delay. To determine the relationship among variables correlation coefficient tool used. Therefore, results of correlation between these variables shown below, referring the same table there is strong correlation between six of project implementation delay factors and project delay at 1% level of significance ($P < 0.01$) affects project implementation delay factors under project completion delay.

To clarify the analysis for each factors, referring correlation matrix table it's observed that there is strong and statistically significant correlation between six project implementation delay factors namely, Stakeholder, Schedule management, cost management, resources management, Communication management and Procurement management. As the correlation coefficient for each factors respectively identified as 0.617, 0.582, 0.582, 0.504, 0.480 and 0.326 and in all

cases at 1% significance level ($p < 0.01$).

Table 4: Correlation between factors and project delay

No	Items	Project Delay		
		Degree of correlatio	P Value	Significance Level
1	Stakeholder management	0.480**	0.000	Significant
2	Scope management	0.110	0.15	Insignificant
3	Schedule management	0.582**	0.000	Significant
4	Cost management	0.326**	0.000	Significant
5	Quality management	-0.059	0.446	In significant
6	Resources management	0.617**	0.000	Significant
7	Communication management	0.504**	0.000	Significant
8	Risk management	0.070	0.366	Insignificant
9	Procurement management	0.582**	0.000	Significant
10	Integration management	0.077	0.316	Insignificant

**** Correlation is significant at the 0.01 level (2-tailed), and ** Correlation is significant at the 0.05 level (2-tailed)*

Source: Survey (SPSS V.25 output 2023)

4.4.2. Assumptions and Diagnostic Test

Attempts have been conducted to test normality, multicollinearity, autocorrelation, and test for average value of the error term are found in appendices part, next to the data collection instrument in this study. The assumption test was done based on theoretical and empirical multiple regression concepts and results found on Appendix next to data collection method. The test results show that the normality, Multicollinearity, autocorrelation, and test for average value of the error term were met the assumptions of regression analysis. It includes the data that was normally distributed with no Multicollinearity and autocorrelation problems. This section contains diagnostic tests for testing the regression assumptions such as multi collinearity test, homoscedasticity, normality test, sampling adequacy, and normality tests for parameter stability were performed.

4.4.2.1. Multicollinearity Test

Problems may arise when two or more predictor variables are correlated. The VIF detects multi collinearity by measuring the degree to which the variance has been inflated. A VIF greater than 10 is thought to signal harmful multi collinearity as suggested by (Frost ,2017)

Table 5: Summary of Collinearity Statistics

	Model	Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Stakeholder management	.651	1.536
	Scope management	.935	1.069
	Schedule management	.892	1.121
	Cost management	.634	1.577
	Quality management	.956	1.046
	Resources management	.627	1.596
	Communication management	.888	1.126
	Risk management	.889	1.124
	Procurement management	.655	1.527
	Integration management	.861	1.162

Source: Survey result, 2023

The Variance inflation factor (VIF) was checked in all the analysis which is not a cause of concern according to (Stephanie ,2018) who indicated that a VIF greater than 10 is a cause of concern.

4.4.2.2. Normality Test

This study used the descriptive statistic of Kurtosis and Skewness statics calculation and demonstrates that the distribution is normal because s, thus data is normally distributed and had a reasonable variance to use subsequent analysis. From the finding on the histogram test on normality, the study found that significance in both tests were less than 0.05 which is leads to the rejection of the null hypothesis that that data on all variables were not normally distributed this is an indication that data on the variables were normally distributed.

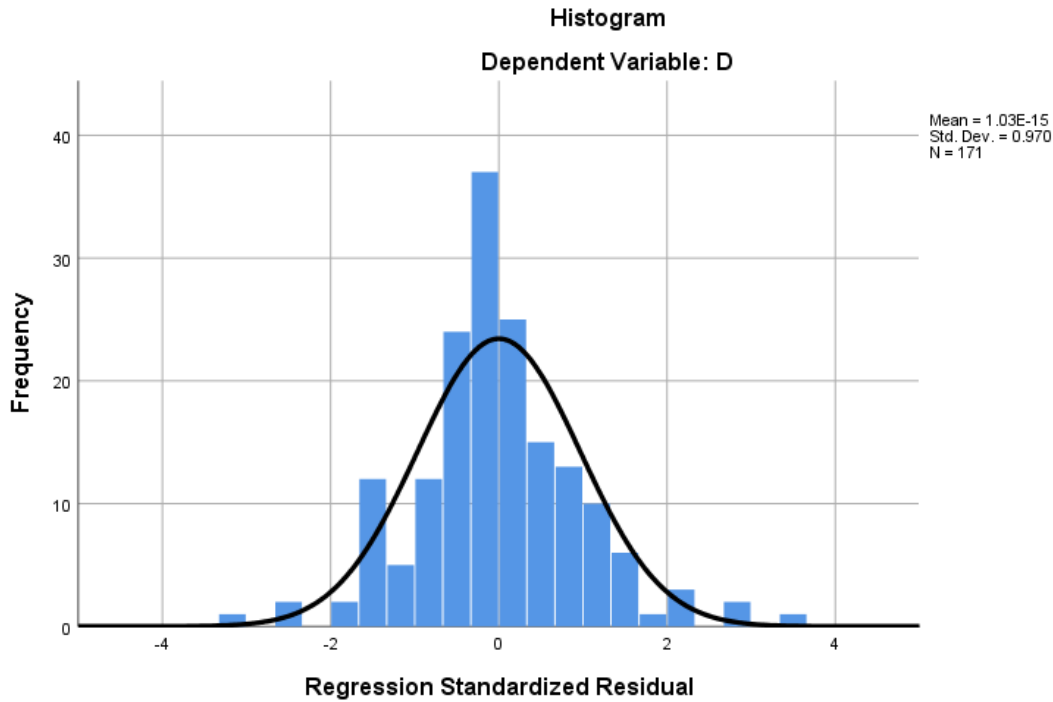


Figure 2.1 Histogram

Source: Survey result, 2023

4.4.2.3. Test for Autocorrelation

If the observations have a natural sequence in time or space, the lack of independence is called autocorrelation. Assumption that is made of the multiple linear regression’s disturbance terms is that the covariance between the error terms over time (or cross-sectional, for that type of data) is zero. To test the presence of autocorrelation, the popular Durbin-Watson Test was employed in this study. The Durbin-Watson statistic is 1.740 found with the specified range from 1.5 to 2.5, representing that the residuals are uncorrelated; therefore, the independence assumption is met for this analysis (Frost, 2017).

Table 6: Result of Durbin-Watson (N=171)

Model Summary	
Model	Durbin-Watson
1	1.740

a. Predictors: (Constant), PIN, PTI, PST, PQU, PSC, PRI, PCM, PRS, PPR, PCO

b. Dependent Variable: D

Source: Survey result, 2023

4.4.2.4. Linearity Test

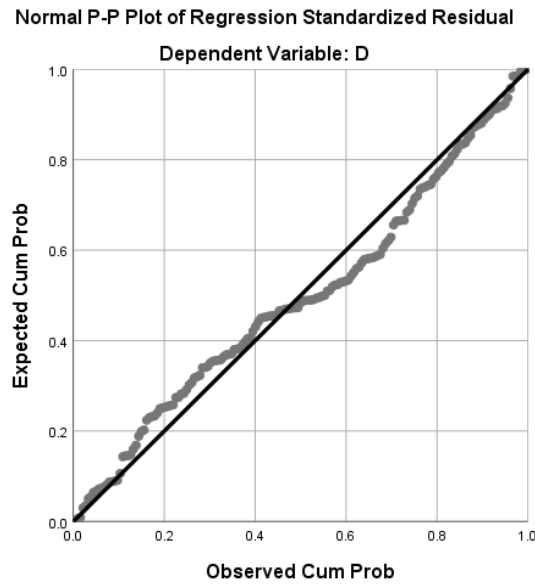
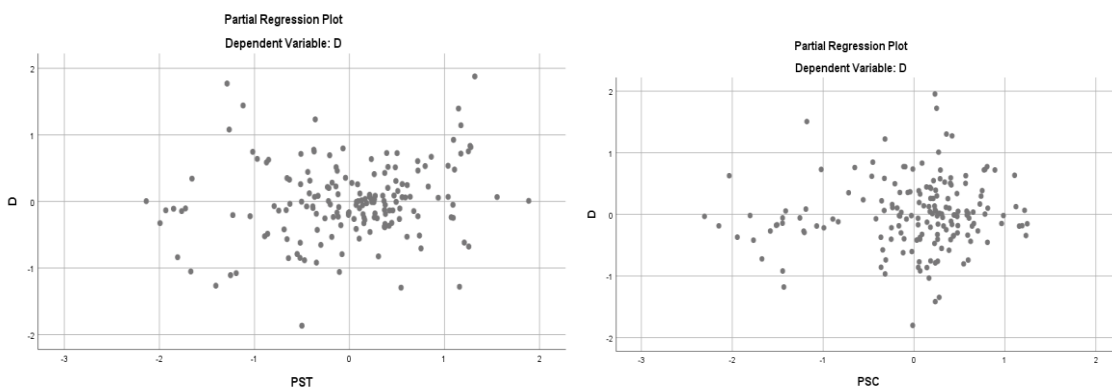


Figure 3.2: Normal P-P Plot

Source: Survey result, 2023

The mean value of response variable (Y) is a straight-line function of the independent variables, X'. A violation of this assumption may indicate that there is a non-linear relationship between the response and explanatory variables. In consequence, the linear regression model may not be applicable or fitted to the data under consideration. Therefore, the graph below shows that the regression can run.



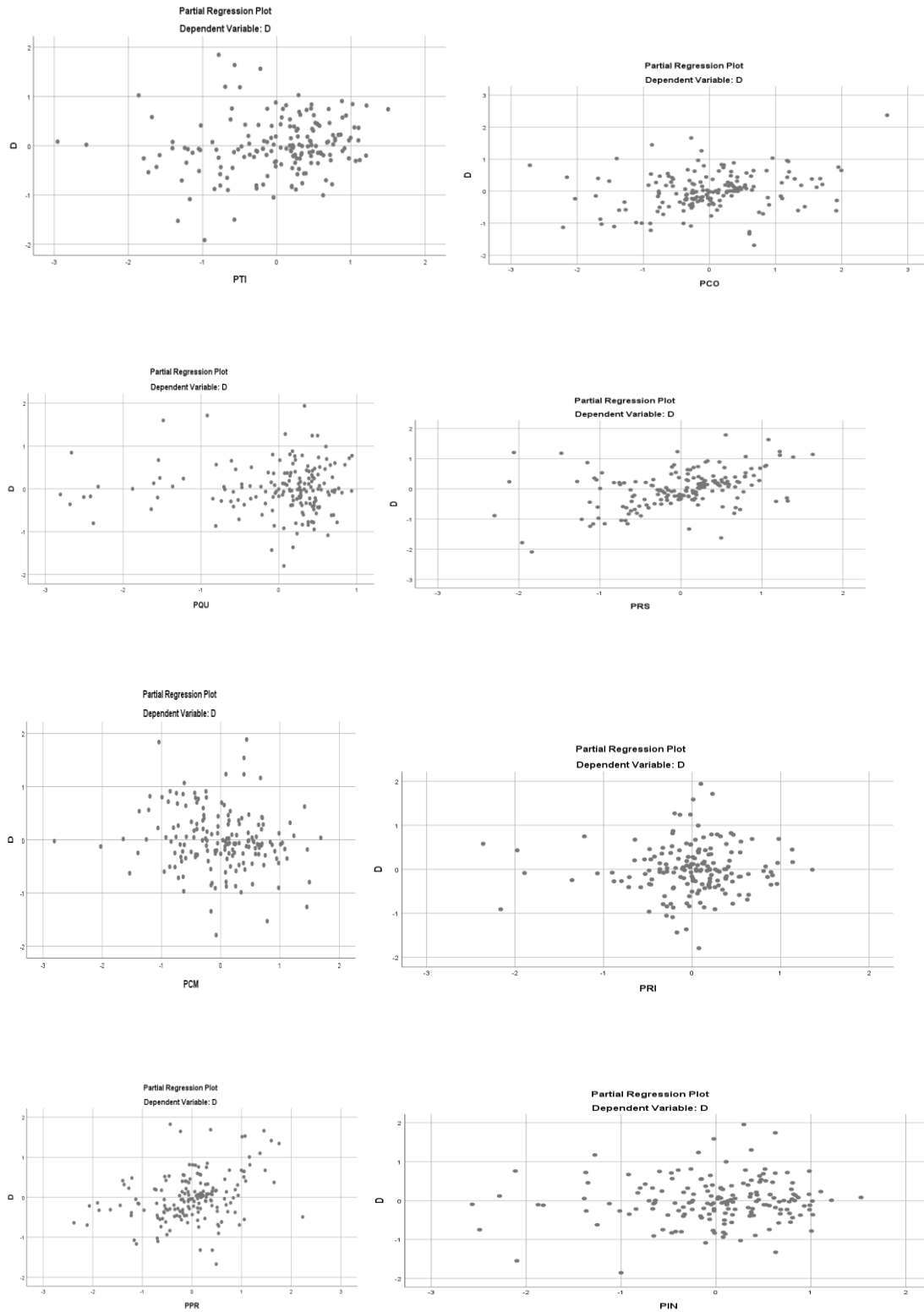


Figure 3.3: Scatter Plots
 Source: Survey result, 2023

When the homoscedasticity assumption has been met, the residuals will present as being randomly scattered around the horizontal line depicting $\epsilon_i=0$. The above figure portrays the test result of a residual plot demonstrating a relative equal clustering of residuals along the horizontal line in a rectangular shape, therefore, the homoscedasticity assumption seems to have been met. It refers to homogeneity of variances, that is, all the treatment groups have the same variance. The homoscedasticity assumption can be tested through the visual examination of the same residual plots of the standardized residuals and predicted values depicted in the assumption of linearity. When the homoscedasticity assumption has been met, the residuals will present as being randomly scattered around the horizontal line depicting $\epsilon_i=0$. The study found the test result of a residual plot demonstrating a relative equal clustering of residuals along the horizontal line in a rectangular shape, therefore, the homoscedasticity assumption seems to have been met.

4.4.3. Multiple Regression Analysis

Multiple regression is a flexible method of data analysis that may be appropriate whenever a quantitative variable (the dependent or criterion variable) is to be examined in relationship to any other factors (expressed as independent or predictor variables). Relationships may be nonlinear, independent variables may be quantitative or qualitative, and one can examine the effects of a single variable or multiple variables with or without the effects of other variables considered (Stephanie, 2018).

Table 7: Regression Test Results Model Summary (N=171)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.765 ^a	.585	.559	.575

a. Predictors: (Constant), PIN, PTI, PST, PQU, PSC, PRI, PCM, PRS, PPR, PCO
 b. Dependent Variable: D

Source: Survey result, 2023

The above table portrays the result of multiple regression test, and its measurement is made by inferring the value of Adjusted R square to explain the magnitude of the effect of the independent variable on the dependent variable. Here below illustrated are the linear regression

of 10 independent variables and dependent variable. As exposed in the above table, the overall bundle of determinant factors of the 10 independent variables were 55.9 % (Adjusted R = .559) explained the dependent variable. This suggests that 55.9 % of project delays depend on the independent variables while the remaining 44.1% is determined by other unaccounted factors in this study.

Table 8: Regression Test Results ANOVA (N=171)

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.707	10	7.471	22.567	.000 ^b
	Residual	52.966	160	.331		
	Total	127.673	170			

a. Dependent Variable: D

b. Predictors: (Constant), PIN, PTI, PST, PQU, PSC, PRI, PCM, PRS, PPR, PCO

Source: Survey result, 2023

As the second table shows the result $F = 22.567$, it can be concluded that the combination of determinant factor has effect on project delay which is statistically significant. Thus, this study rejects the null hypothesis. F-test is used to determine whether any one of the predictor variables is related to explanatory variable in model equation. From the above Table 13, it is evident that F significance value is less than .05 thus; at least one independent variable is linearly related to dependent variably thereby proving the validity of model equation.

Table 9: Test of Significance - Regression Test Results Coefficients (N=171)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-.052	.605		-.086	.932
Stakeholder management	.130	.058	.143	2.262	.025
Scope management	.068	.061	.059	1.114	.267
Schedule management	.120	.058	.112	2.083	.039
Cost management	.161	.052	.199	3.112	.002
Quality management	-.007	.058	-.006	-.116	.908
Resources management	.357	.063	.364	5.660	.000
Communication management	-.124	.063	-.107	-1.985	.049
Risk management	.042	.081	.028	.513	.609
Procurement management	.263	.058	.286	4.543	.000
Integration management	.057	.06	.052	.946	.345

a. Dependent Variable: Project Delay

Source: Survey result, 2023

The regression equation gives us two unstandardized slopes, both of which are partial statistics. OLS unstandardized coefficients can be interpreted as a one unit increase in X is associated with a coefficient sized increase (decrease) in Y. Standardized coefficients are the estimates resulting from an analysis carried out on variables that have been standardized so that their variance is 1. This means that they are in “standard deviation” terms or units and can be compared to each other. Whereas unstandardized coefficients literally tell us about the change in Y for every 1-unit change in X. He also stated that the model summary table reports the strength of the relationship between the independent and the dependent variable.

From this multiple regression table, this study found similar results as there is a positive and significant effect of Stakeholder management (.025) on expansion projects delay.

This study employed multiple regression tables and it found there is a positive and significant effect of schedule management (.039) on expansion projects delay.

Using multiple regression table, this study found that there is a positive and significant effect of cost management (.002) on expansion project delay.

This study used multiple regression tables and it found there is a positive and significant effect resources management (.0000) on expansion project delay.

This study deployed multiple regression tables and it found there is a positive and significant effect of communication management (.049) on expansion project delay.

Using multiple regression table, this study found that there is a positive and significant effect of procurement management (.0000) on expansion project delay.

Model Specification

The multiple linear regression model of the study is based on the theoretical regression model as indicated follows.

$$Y_i = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5) + \beta_6(X_6) + \beta_7(X_7) + \beta_8(X_8) + \beta_9(X_9) + \beta_{10}(X_{10}) + e$$

$$Y = -.052 + .130x_1 + .068x_2 + .120x_3 + .161x_4 - .07x_5 + .357x_6 - .124x_7 + 0.42x_8 + .263x_9 + 0.57x_{10} + e$$

Where: Y = project delay, α = the y intercept. $X_1 - X_{10}$ causes of project delay and e represents error term. α is the intercept term- it gives the mean or average effect on Y of all the variables excluded from the equation, although its mechanical interpretation is the average value of Y when the stated independent variables are set equal to zero. $\beta_1, - \beta_{10}$ refer to the coefficient of their respective independent variable which measures the change in the mean value of Y , per unit change in their respective independent variables. This highest beta values indicated that ineffective resources and faulty procurement management have been the main causes of project delay.

4.4 Discussion

Based on the results of the regression analysis, it was found that six of the independent variables (Stakeholder management, Schedule management, Cost management, Resources management, Communication management and procurement management) were significantly related to the dependent variables of delay. The remaining four independent variables (Scope management, Quality management, Risk management and Integration management) found to be insignificant the prediction of delay.

The pre-established hypothesis testing was made based on β , t , and P values. Hence using those coefficient results, the proposed hypotheses for this study were tested as follows.

H1: Stakeholder management has a significant positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that, Stakeholder management have significant effect on project delay referring ($\beta = .143$, $t = 2.262$ & $p < 0.05$). Hence, the pre-established hypothesis means to be accepted. The statistics reflecting if the HBSC strive to improve stakeholder management by 1% then the project delay can be decreased by 14.3%. Therefore, the findings of the study are in line with the former findings by (Gyan & Ampomah, 2016) (Shimeles Bekele, 2018), (Demissie Retta, 2021) stating identifying stakeholder, plan stakeholder engagement, manage stakeholder engagement and monitor stakeholder have significant negative effect on project delay.

H2: Scope management has a significant positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that, Scope management was not found to have a significant effect on project delay referring ($\beta = .059$, $t = -1.114$ & $p > 0.05$). Hence, the pre-established hypothesis means to be rejected. Former findings of researchers including, (Ratta, 2017), (Kebede, 2019) plan scope management, collection requirement, define scope, create WBS, validate scope and control scope have effect to the project completion. However, for this specific study scope management didn't have significant effect on project delay.

H3: Schedule management has a significant positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that, Schedule management has significant effect on project delay referring ($\beta = .112$, $t = 2.083$ & $p < 0.05$). Hence, the pre-established hypothesis means to be accepted. The statistics reflecting if HBSC sufficiently manage the realistic schedule by 1%, the project delay can be decreased by 11.2%. Therefore, the findings of the study is in line with the former research findings by (Habtegebriel, 2019) (Dino & Ababa, 2022) states plan schedule management, define activities, sequence activities, estimating activity duration, develop schedule and control schedule have negative effect on the project delay.

H4: Cost management has positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that, Cost management has significant effect on project delay referring ($\beta = .199$, $t = 3.112$ & $p < 0.05$). Hence, the pre-

established hypothesis means to be accepted. The statistics reflecting if projects are mean to be planned properly by 1% then the project delay can be decreased by 19.9%. Therefore, findings of the study are in line with former researches by (Betru Advisor Abraraw Chane & Ababa, 2021), (Olasupo et al., 2012) and (Advisor & Mamo, 2018) identifying ineffective planning, managing and controlling of projects cost ultimately contributes for the delay of projects implementation.

H5: Quality management has significant positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that, Quality management was not found to have a significant effect on project delay referring ($\beta = -.006$, $t = -.116$ & $p > 0.05$). Hence, the pre-established hypothesis meant to be Rejected, Therefore, the findings of the study are not in line with findings of former research by (Abera, 2021) stating the role of leadership, employee participation, customer focus, supplier quality management, continual improvement, and organizational culture have effect on the project completion.

H6: Resources management has significant positive effect on project Delay

The results of multiple regression indicated under table 1.7 shows that, Resources management has positive significant impact on project delay reflecting ($\beta = .364$, $t = 5.660$ & $p < 0.05$). Hence, the pre-established hypothesis meant to accept. The statistics reflecting if projects are implemented properly at 1% then the project delay can be decreased by 36.4%. Therefore, findings of the study are in line with research outputs of former research by (Girum, 2022); (Nagaraju et al., 2012) and (Assefa, 2021) revealed that planning, managing and controlling human resource, material resource, financial resources and machinery resource have a positive and significant effect on project completion.

H7: Communication management has a significant positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that Communication management have significant effect on project delay referring ($\beta = -.107$, $t = -1.985$ & $p > 0.05$). Hence, the pre-established hypothesis means to be accepted. The statistics reflecting if HBSC strives to adopt monitoring and follow-up by 1% the project delay can be decreased by 10.7%. Therefore, the findings of the study is in line with the former research findings by (A. Kuma, 2019) and (Soliman, 2017) communication practice, communication channels, communication

methods have effect on the completion of project .

H8: Risk management has positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that risk management was not found to have a significant impact on project delay referring ($\beta = .028$, $t = .513$ & $p > 0.05$). Hence, the pre-established hypothesis means to be Rejected .. Therefore, findings of the study are not in line with former researches by (G. Kuma, 2018b) and (G. Kuma, 2018a) stating identifying, analyzing and mitigating risk have effect on the project completion.

H9: Procurement management has significant positive effect on project delay

The results of multiple regression indicated under table 1.7 shows that, Procurement management affects the project delay referring ($\beta = .286$, $t = 4.543$ & $p < 0.05$). Hence, the pre-established hypothesis meant to be accepted, the statistics reflecting if the HBSC primarily able to Improve by 1% then the project delay can be reduced by more than double 28.6%. Therefore, the findings of the study are in line with findings of former research by (Abdul Rashid et al., 2006) and (Mekonnen, 2021) stating that planning procurement ,conducting procurement and controlling procurement has effect on the project delay.

H10: Integration management has significant positive effect on project Delay

The results of multiple regression indicated under table 1.7 shows that, Integration management was not found to have a significant effect on project delay reflecting ($\beta = .052$, $t = .946$ & $p > 0.05$). Hence, the pre-established hypothesis meant to Rejected. Therefore, findings of the study are not in line with research outputs of former research by (Demirkesen & Ozorhon, 2017) states that development of project charter, knowledge integration, process integration ,staff integration ,supply chain integrartion and integration of change have effect on the project delay.

Table 10: Summary of hypothesis

Hypothesis	Tool	Outcome
H1: Stakeholder management has a significant positive impact on project delay	Multiple Regression	Accepted
H2: Scope management has a significant positive impact on project delay	Multiple Regression	Rejected
H3: Schedule management has a significant positive impact on project delay	Multiple Regression	Accepted
H4: Cost management has positive impact on project delay.	Multiple Regression	Accepted
H5: Quality management has significant positive impact on project completion	Multiple Regression	Rejected
H6: Resources management has Significant positive impact on project completion	Multiple Regression	Accepted
H7: Communication management has Significant positive impact on project delay	Multiple Regression	Accepted
H8: Risk management has Significant positive impact on project delay.	Multiple Regression	Rejected
H9: Procurement management has Significant positive impact on project	Multiple Regression	Accepted
H10: Integration management has Significant positive impact on project completion	Multiple Regression	Rejected

CHAPTER FIVE

SUMMARY OF THE KEY FINDINGS, CONCLUSION AND RECOMMENDATION

The chapter main deals with the summary of major findings of the study and respective conclusions drawn from the analysis made, additionally, based on these findings the study will make possible recommendations.

5.1 Summary of key findings

This explanatory research study aimed to investigate the effect of 10 project knowledge areas on the program delay in expansion projects. The data has been collected from 173 respondents via on line survey questionnaires. The researcher used a five -point likert scale to measure the level of the 10 project knowledge areas and the extent of delay .the likert scale ranged from 1(very low) to 5 (very high). The data collected was analyzed using descriptive statistics ,correlation analysis and multiple regression analysis .Descriptive statistics were used to describe the sample ,and correlation analysis was used to examine the relationships between the 10 project knowledge area and the project delay .Multiple regression analysis was used to examine the effect of the 10 project knowledge areas and delay in expansion program. To achieve the study project objectives a reliability, multi collinearity, normality and linearity test were conducted before conducting Correlation and multiple regression analysis.

The descriptive statistics show that the sample comprised 73.7% male and 26.3% female respondents .the majority of the respondents were between the age of 31 and 50 years ,and they had a minimum of a bachelor's degree .the respondent had an average of 5 years of experience in the brewery industry.

The result of the correlation analysis show that six of the project knowledge area had a strong correlation with project delay. The six project knowledge with strong correlation were project stakeholder ,project time,project cost ,project resource ,project communication and project procurement management. where as , scope management ,quality management ,risk management and integration management were not significantly correlated with expansion program delay.

The multiple regression analysis showed that project stakeholder , project time, project cost ,project resource , project communication and project procurement management were significantly impact the expansion program of the brewery.However ,scope management ,quality management ,risk management and integration management were found insignificant to the delay of expansion program. the adjusted R -square value for the was 0.559(55.9%),which indicate that the model is good fit for the data.

Based on the result alternative hypothesis related with Stakeholder management, Schedule management, cost management , resources management , communication management and Procurement management are accepted . where as , alternative hypothesis related to scope management , quality management , risk management and integration management were rejected .

Over all ,this study provide valuable insights into the complex relationships between project knowledge areas and program delay in expansion .however ,further research is needed to know the remaining factors which are impacted the program delay in the expansion program.

5.2 Conclusion

The primary purpose of this research was to investigate the effect of 10 project management knowledge areas on the delay of expansion projects in a brewery. The researcher employed a multiple regression analysis to identify which project management knowledge area had a significant effect on projects delay. Through that analysis, the researcher determined that stakeholder, time, cost, resource, communication, and procurement management had statistically significant impact on program delay in the brewery whereas Scope management, quality management, risk management, and integration management, were found to be insignificant in their correlation with projects delay.

Therefore, the following conclusions has been drawn from this research:

1. Stakeholder involvement plays a crucial role in project delays. It is essential for project managers to actively engage with stakeholders to mitigate delays.
2. Effective time management practices are vital for ensuring timely project completion. Project managers should focus on proper scheduling and monitoring to minimize delays.
3. Cost management is another critical factor in project delays. It is important to allocate resources efficiently and control project costs to prevent delays.
4. Resource allocation should be carefully managed to avoid delays. Adequate and appropriate resources must be allocated to the project at different stages to ensure smooth progress.
5. Communication plays a significant role in reducing project delays. Effective communication channels and strategies should be established to facilitate clear and timely information exchange among team members.
6. Efficient procurement practices are crucial to avoid project delays. Project managers must ensure timely and appropriate procurement of materials and services to keep the project on schedule.

It is important to note that the remaining variables showed no significant influence on project delays. However, further research may be required to explore any potential relationships between these variables and project delays.

5.3 Recommendation

To enhance project knowledge management and reduce program delays in the brewery, the researcher recommends the following changes:

- **Enhance Stakeholder engagement:** effective stakeholder management is vital for any project's success, and the brewery must make it a priority. The key stakeholders should be identified early, and a communication plan should be developed to keep all stakeholders informed of the project's progress.
- **Strengthen Time Management:** The brewery ought to make a deliberate effort to strengthen time management. There must be an effective project schedule that accounts for all the activities, and every team member should be accountable for their timelines. This strategy must ensure that project schedules are adhered to, and there are no unnecessary delays to deadlines.
- **Cost optimization:** The brewery must establish appropriate cost control measures to minimize financial irregularities and optimize the allocation of resources to project activities that deliver the most value. The project manager should be accountable for all project costs and ensure that the budget is not overrun.
- **Effective Communication:** There is a strong need for the brewery to improve the communication lines between teams, departments, and stakeholders. This change will help create a culture of project collaboration and transparency that could help reduce project delays and promote early completion.
- **Induce a Better Procurement Management Process:** The procurement process is critical to the timely delivery of projects that deliver value for money. The brewery must improve its procurement process, enforcing systematic communication during procurement activities, and promoting transparency in procurement procedures.
- **Effective resource management:** it is also imperative for breweries to consider employing effective human resource management strategies, including adequate training and development programs, to enhance their employees' skills. This ensure that the knowledge and skill to undertake the project management process

effectively .by implementing these strategies, breweries can increase the like hood of an efficient expansion program delivery, minimizing project delays, ensuring quality, and promoting the overall growth of the industry.

- Develop Standard Scope, Quality, Risk, and Integration management processes: These vital project management areas may require more extensive attention, after being found insignificant in correlation with project delay. The brewery must create adequate scope, quality management, risk, and integration management processes to align these areas with the organization's project management objectives.

Applying the recommendations above will help optimize project management and help reduce delays. Awareness of project management's critical domains can provide brewery management with better-informed decision-making capabilities, reducing unnecessary delays to happen in the future. By following these recommendations, the brewery can improve project management knowledge, reduce program delays, and ensure the timely delivery of high-quality projects.

5.4 Area for further research

The study has significant implication for future research in this area. Specifically, future research could investigate additional variables that may contribute to the delay in expansion of the program. A few of the vital factors could be environmental factors, change in regulation, and external stakeholder influence. Therefore, future researchers should aim to address these variables to develop a more compressive understanding of the factors that influence the success of expansion programs.

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APPENDIX I

APPENDIX – Questionnaire



ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

Master of Project Management program

Dear Respondent,

Thank you for taking the time to complete this questionnaire. The purpose of this survey is to examine the impact of various knowledge areas on the delay of expansion programs. Expansion programs are critical to the growth of organizations, but they often face delays that can negatively impact the organization's profitability and competitiveness. Understanding the factors that contribute to delays can help organizations develop effective strategies to mitigate them.

The survey is based on an explanatory research design and consists of questions that focus on ten knowledge areas of project management. These knowledge areas are Project Integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Human Resource Management, Project Risk Management, Project Procurement Management, Project Communication Management, and Project Stakeholder Management.

For each knowledge area, there are six questions to answer, and we ask that you rate each question on a scale of 1 to 5, where 1 means "strongly disagree" and 5 means "strongly agree."

Your responses will be kept confidential, and only aggregate data will be used for analysis. We appreciate your honest and thoughtful feedback, which will help us gain valuable insights into the factors that impact the delay of expansion programs.

Thank you once again for your valuable time and input.

Best regards,

Tamerat Tamene

Tel – +251935403889

Email – Tamerat.

Part I – Respondents’ Demographic Information

Direction - please insert (x) in the box for your appropriate answer your demographic or personal information,

1. Gender:

Male Female

2. Age

Less than 30 31 -50 Above 50

3. Education Level

Below High school Diploma Degree
 Masters PHD

4. Marital Status

Single Married Divorced Others

5. Your experience in working with Habesha breweries share company Projects.

Above 10years <1YR 1– 5years 5-10years

Part II – effect of 10 project knowledge area on expansion program

Direction - please insert (x) in the box for your appropriate answer your demographic or personal information,

Question 1 – How do you perceive and rate the following listed 10 knowledge area are impacted on the delay of expansion Program? Please put “X” mark with the answer you choose and note that 1 represents for “Strongly Disagree”; 2 for “Disagree”; 3 for “Neutral”; 4 for “Agree” and 5 for “Strongly Agree”.

S/n	10 Project Knowledge area	1	2	3	4	5
	Project stakeholder management					
PST1	Stakeholders were not identified and analyzed effectively.					
PST2	Stake holder expectation wasn’t managed throughout the project lifecycle.					
PST3	Stakeholders were not engaged and informed about expansion projects progress and results.					
PST4	Stakeholder management was not well documented and reported throughout the project life cycle					
PST5	Adequate strategies were not developed to meet, satisfy, and retain stakeholders.					
PST6	Changes affecting stakeholder management were not assessed for the impact on project timelines and budget.					
	project scope management					
PSC1	Project deliverables were not clearly defined and agreed up on by all stakeholders.					
PSC2	The scope changes control process was not followed throughout the projects.					
PSC3	Scope changes were not documented, assessed and approved before implementation.					
PSC4	Changes in project scope were not requested through appropriate channels and approved /denied through formal request process.					
PSC5	Change in project scope were not assessed for impact on project timelines and budget.					

PCS6	The project scope was not tracked and monitored throughout the project life cycle.					
PCS7	The project team has not managed changes to the requirement					
PSC8	Scope management plan wasn't be utilized.					
	Project schedule management					
PTI1	The project schedule was not completed on time.					
PTI2	The project schedule was not effectively communicated to all stakeholders.					
PTI3	Change to the project schedule were not managed and communicated effectively.					
PTI4	Change to the project schedule were not reviewed and approved to ensure project components remained in alignment.					
PTI5	Project scheduling was not clearly defined and followed consistently.					
PTI6	The project schedule was not maintained and updated throughout the project.					
PTI7	There was no detail workplan.					
PTI8	Project workflow and processes are not documented.					
	Project cost management					
PCO1	The project came without the allocated budget.					
PCO2	The project budget was not realistic and achievable.					
PCO3	The project budget and cost were not tracked and monitored regularly to ensure alignment with the project plan					
PCO4	Changes to the project budget were not reviewed and approved through request process.					
PCO5	The project budget was not structured to allow for changes in project scope and risk management.					
PCO6	Cost management was not well documented and reported throughout the project lifecycle.					
	Project quality management					
PQU1	The project quality plan was not clearly defined and communicated to all project participants.					
PQU2	Change to the project quality plan were not assessed for impact on project timelines and budget.					
PQU3	Issues affecting project quality were not promptly identified and addressed.					
PQU4	The project was not meet stakeholder expectations of quality.					
PQU5	Quality was not monitored throughout the project lifecycle.					
PQU6	The project team was not implemented appropriate corrective action when required.					
PQU7	The project teams were not knowledgeable enough to deliver project quality.					
PQU8	There was no structured process for quality control.					
	Project resource management					

PRS1	The project team didn't have the necessary skill and knowledge to complete the project.					
PRS2	The project team was not effectively managed by the project manager.					
PRS3	The project didn't have the required resources available when needed.					
PRS4	Adequate resources (personnel, equipment.) were not allocated to complete the project components.					
PRS5	Changes affecting resource allocation were not assessed for impact on project timelines and budget.					
PRS6	Resource management was not well documented and reported throughout the project lifecycle.					
PRS7	The role and responsibility of the project teams were not clearly defined.					
PRS8	Conflict resolution was not implemented when needed.					
	Project communication management					
PCM1	Communication management plan was not well defined and adhered to throughout the project.					
PCM2	Effective project communication channels were not established and maintained.					
PCM3	Communication efforts were not coordinated to ensure effective project content delivery.					
PCM4	Communication was not timely, clear and effective.					
PCM5	key Project stakeholders were not informed about project status and progress.					
PCM6	Communication practices were not well documented and reported throughout the project lifecycle.					
	Project risk management					
PRI1	Risk was not identified and documented throughout the project.					
PRI2	The project team was not developed and implemented a risk management plan.					
PRI3	Risk was not effectively monitored and managed throughout the project					
PRI4	Changes affecting project risk were not assessed for impact on project timelines and budget.					
PRI5	Risk management practices were not well integrated into the project plan					
PRI6	Risk management plan was not well documented and reported throughout the project lifecycle.					
PRI7	Risk assessments were not conducted regularly.					
PRI8	All possible high-risk area were not identified.					
	Project procurement management					
PPR1	Procurement requirements were not defined and communicated to potential vendor and suppliers effectively.					

PPR2	The procurement process was not effectively managed throughout the project.					
PPR3	Procurement plan was not aligned with project timelines and budget.					
PPR4	Procurement risks were not assessed and managed.					
PPR5	Procurement performances were not monitored and reported.					
PPR6	Vendor management was not well documented and reported throughout the project lifecycle.					
PPR7	There was insufficient procurement planning.					
PPR8	There were issues with getting necessary supplies or services.					
	Project integration management					
PIN1	The project charter clearly did not outline the project goals, objective and stakeholder expectation.					
PIN2	Key stakeholders were not consulted and involved during project planning.					
PIN3	Project plan was not regularly reviewed and updated to ensure alignment with project goals.					
PIN4	The project objectives were not clearly defined and aligned with organization goals.					
PIN5	Changes in project scope were not assessed for the impact on the other project areas and communicated effectively.					
PIN6	Project integration was not achieved such that all the project components were aligned.					
	Delay					
D1	Lack of stakeholder engagement caused delay on expansion program					
D2	Poor time management contributed to the delay of expansion program					
D3	Poor cost management caused delay on expansion program					
D4	Delay of expansion program arises from difficulties in acquiring materials, equipment, or resource necessary for the program.					
D5	Miscommunication issues among project team members were source of expansion program delay.					
D6	Procurement was source of delay for expansion program					

APPENDIX II

Correlations

		D	PST	PCO	PRS	PPR	PSC	PQU	PTI	PRI	PIN	PCM
D	Pearson Correlation	1										
	Sig. (2-tailed)											
PST	Pearson Correlation	.480**	1									
	Sig. (2-tailed)	0.000										
PCO	Pearson Correlation	.504**	.521**	1								
	Sig. (2-tailed)	0.000	0.000									
PRS	Pearson Correlation	.617**	.389**	.365**	1							
	Sig. (2-tailed)	0.000	0.000	0.000								
PPR	Pearson Correlation	.582**	.347**	.284**	.502**	1						
	Sig. (2-tailed)	0.000	0.000	0.000	0.000							
PSC	Pearson Correlation	0.110	-0.065	0.022	0.053	0.140	1					
	Sig. (2-tailed)	0.150	0.399	0.773	0.488	0.068						
PQU	Pearson Correlation	-0.059	0.004	-0.021	-0.044	-0.114	-0.105	1				
	Sig. (2-tailed)	0.446	0.955	0.790	0.569	0.139	0.170					
PTI	Pearson Correlation	.582**	.347**	.284**	.502**	1.000**	0.140	-0.114	1			
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.068	0.139				
PRI	Pearson Correlation	0.070	-0.039	0.001	0.000	.193*	.154*	-0.070	.193*	1		

	Sig. (2-tailed)	0.366	0.615	0.987	0.999	0.011	0.045	0.360	0.011			
PIN	Pearson Correlation	0.077	-0.036	-0.120	0.117	0.122	0.016	-0.106	0.122	.154*	1	
	Sig. (2-tailed)	0.316	0.638	0.119	0.128	0.113	0.834	0.168	0.113	0.045		
PCM	Pearson Correlation	.480**	1.000**	.521**	.389**	.347**	-0.065	0.004	.347**	-0.039	-0.036	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.399	0.955	0.000	0.615	0.638	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).